Governance and Compliance

Cybersecurity

GRC Day 3

Class Objectives

By the end of today's class, you will be able to:

Explain how organizations use policy and procedure to formalize standards of "right" and "wrong."

Use governance frameworks to determine which policies an organization must develop.

Explain how audits are used to ensure compliance.

Develop business continuity and disaster recovery plans.

DAY 1

Structure of the security organization and the importance of security culture.

DAY 2

Threat modeling and risk analysis.

Governance and Compliance

Today we will cover governance, compliance, and business continuity planning and disaster recovery (BCP/DR).

Governance	Codifying and enforcing proper behavior and operations. That is, establishing standards of “right” and “wrong,” and enforcing those standards.
Compliance	Enforcing policies in order to meet those standards.

Knowledge of governance, compliance, and BCP/DR is crucial for all security professionals.

Most professional security work is mandated by governance policies and reviewed during compliance audits.

Class Breakdown

Today's class will cover the following topics:

01 Codifying Rules with Policy and Procedures

02 Using Governance Frameworks to Guide Policy Decisions

03 Audit and Compliance

04 Business Continuity Planning and Disaster Recovery (BCP/DR)

05 Developing BCP/DR Recommendations for an Organization

Codifying Rules with Policy and Procedures

REVIEW

We began this week developing a training plan to improve GeldCorp’s security culture by changing employee behavior.

Policy and Framework

A **policy** is a rule that defines the “right” behavior.

- Policies inform standards for behavior and operations.

A **governance framework** defines the policies an organization must follow.

- Organizations must use these frameworks to remain compliant with federal regulations and industry standards.

Policy and Framework

Today, we'll explore these concepts by:

Defining formal policies for the financial tech company GeldCorp.

Assessing what user data collected by GeldCorp is subject to General Data Protection Regulation (GDPR) and Payment Card Industry (PCI) Security Standard.

Determining whether GeldCorp's data collection practices are GDPR and PCI compliant.

Using Organizational Goals to Define Policies

Remember: We developed training plans by *setting goals and determining the steps necessary to achieve them.*

The training plan prescribed a specific rule that employees should follow.
For example, “Do not click on links in emails to domains outside the corporate intranet.”

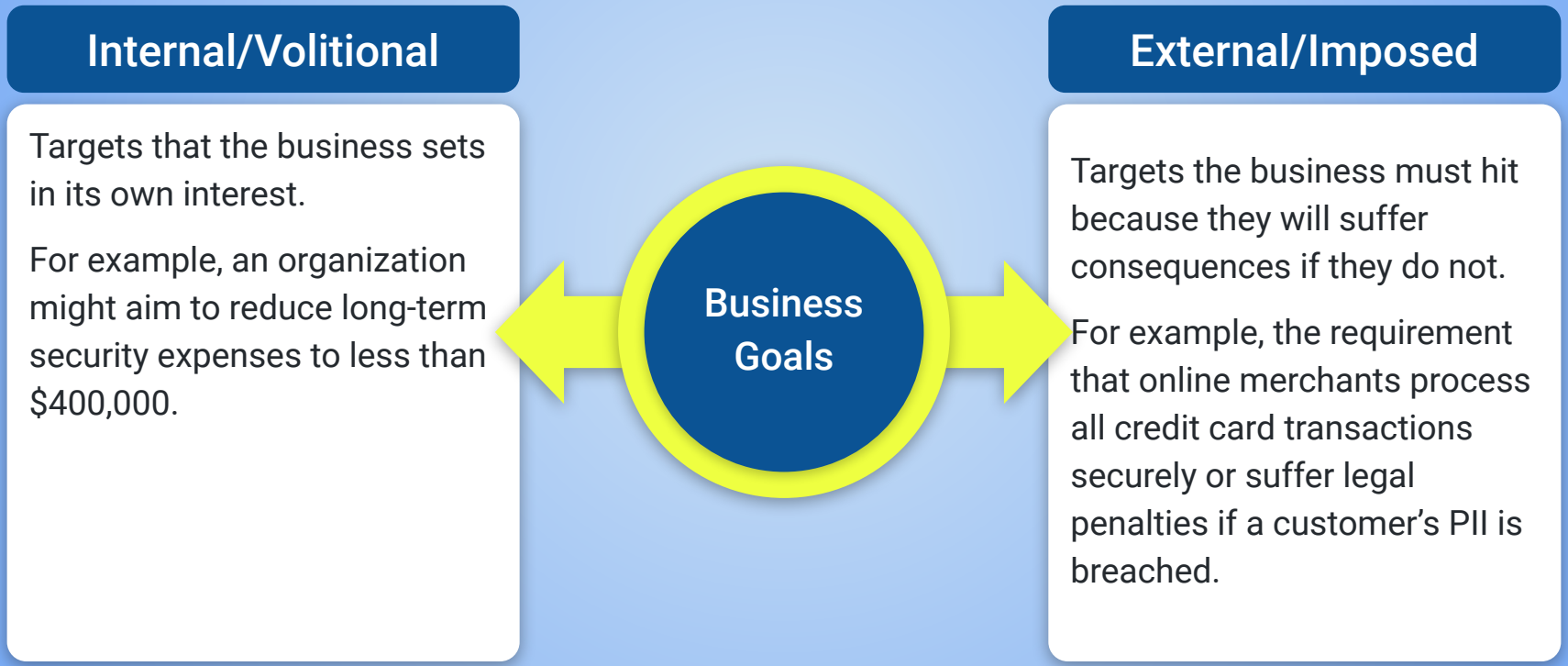
This rule is an example of a policy—a course or principle of action proposed by a business.
In this case, the rule specifies a download policy.

The goal of defining and implementing a new download policy was to reduce employee click-through rate to less than 5%.

In other words, the business implemented a *policy* in order to achieve a *goal*.

How Business Goals Drive Policy Implementation

Business goals often drive policy creation. The two main types of business goals are:



Internal Objectives and Policy: Example

Reduce unauthorized root-level login incidents on Domain Controllers to 0.

An organization would hand this to the IT team, who would be responsible for determining how to implement it.

One possible implementation is to require all domain administrators to use strong passwords, and force them to create a new password every month.

Internal Objectives and Policy

Implementing a strong password policy might require that administrators create passwords with:

- At least 16 characters
- At least 1 letter and 1 number
- At least 1 special character (', (,], etc.)
- No portion of the administrator’s username
- Required monthly updates

This policy defines clear standards of behavior.

- Administrators must follow very specific rules for passwords. Their computers will also enforce these rules.
- These rules are specifically designed to achieve the goal of reducing the incidence of unauthorized root-level logins on Domain Controllers to 0.

Password Policy: Example

Part 1

CONFIDENTIAL DOCUMENT

DATE: 5/17/2017

AUTHOR: Jane Author

DOMAIN ADMINISTRATOR PASSWORD POLICY

This document lays out a password policy for Domain Administrators.

PURPOSE

The purpose of implementing a Domain Administrator password policy is to reduce the incidence of unauthorized root-level logins on Domain Controllers.

The organization has prioritized this objective in the interest of protecting the integrity and confidentiality of data on the corporate intranet.

Password Policy: Example

Part 2

CONFIDENTIAL DOCUMENT

POLICY DESCRIPTION

Domain Administrators will be required to create a new strong password every month. This password MUST NOT include any substring of the Domain Administrator's username.

In addition, the password must include:

- At least 16 Characters
- At least 1 Letter and 1 Number
- At least 1 Special Character (`'`, `(`, `]`, etc.)

For example, the following passwords are legal for the user `guest`:

- `CloGyPTioNEntEDist`
- `CloGyPTioNEntEDist`
- `n0tparticularly!strong`

The following password is illegal:

- `gue1st12345678901342`

Password Policy: Example

Part 3

CONFIDENTIAL DOCUMENT

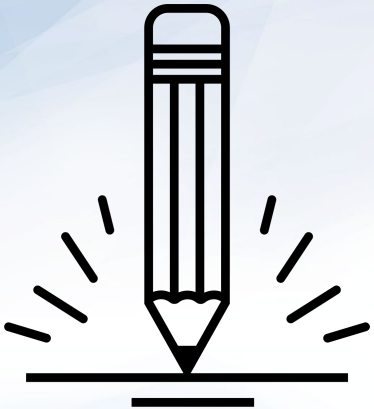
ENFORCEMENT

All workstations on the corporate domain have been configured to force Administrators to adhere to the above password complexity constraints and refresh intervals.

Non-compliant passwords will be rejected by the operating system.

MONITORING

All attempts to log in as a Domain Administrator—both remote and local—will be monitored.



Activity: Documenting Company Policies

In the previous lesson, you performed a risk analysis to help GeldCorp understand its most critical threats. They used your results to set several internal security goals.

In this activity, you will help them realize these goals by developing and documenting policies to support them.

Suggested Time:
15 minutes

Time’s Up! Let’s Review.

Using Governance Frameworks to Guide Policy Decisions

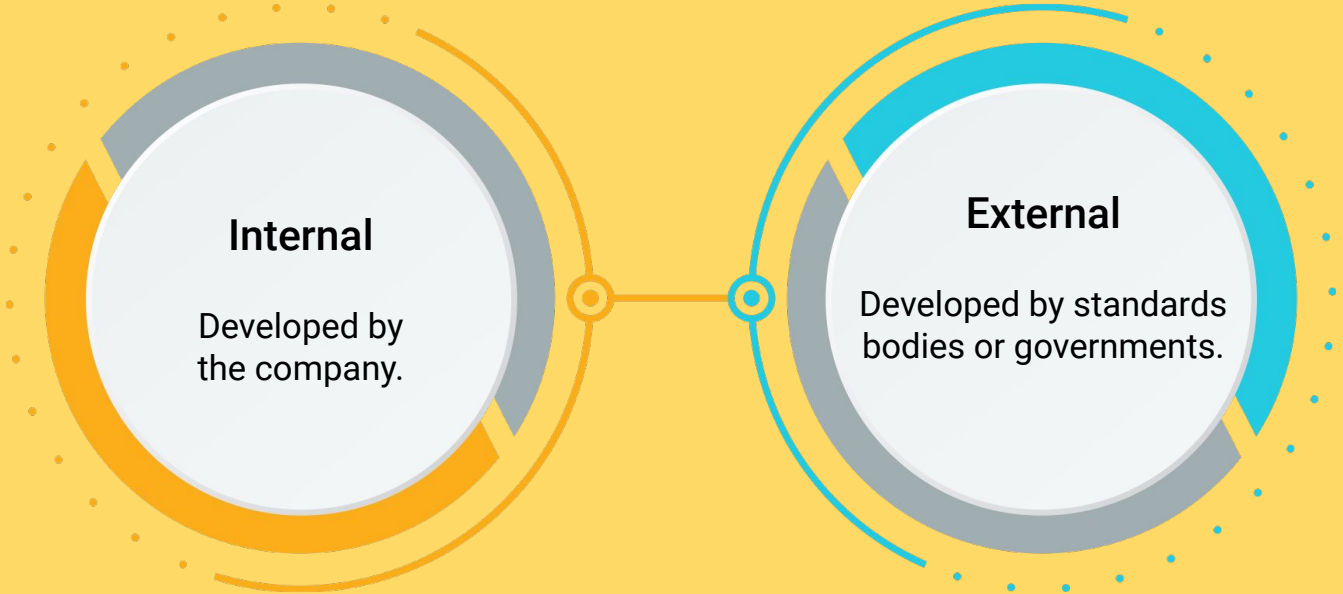
External Objectives and Policy

Businesses often have to follow external rules in addition to those they set for themselves. External rules don't directly benefit the business, but might be mandated by law or industry standards.

Example: Merchants that process financial transactions are legally required to guarantee their customers' data remains confidential. If a company suffers a breach resulting in the disclosure of customer PII, they may be fined and face other legal penalties.

Governance Frameworks

Some rules and policies must be followed by an entire organization or industry. Collections of such policies are called **governance frameworks.** These can be:



SEC

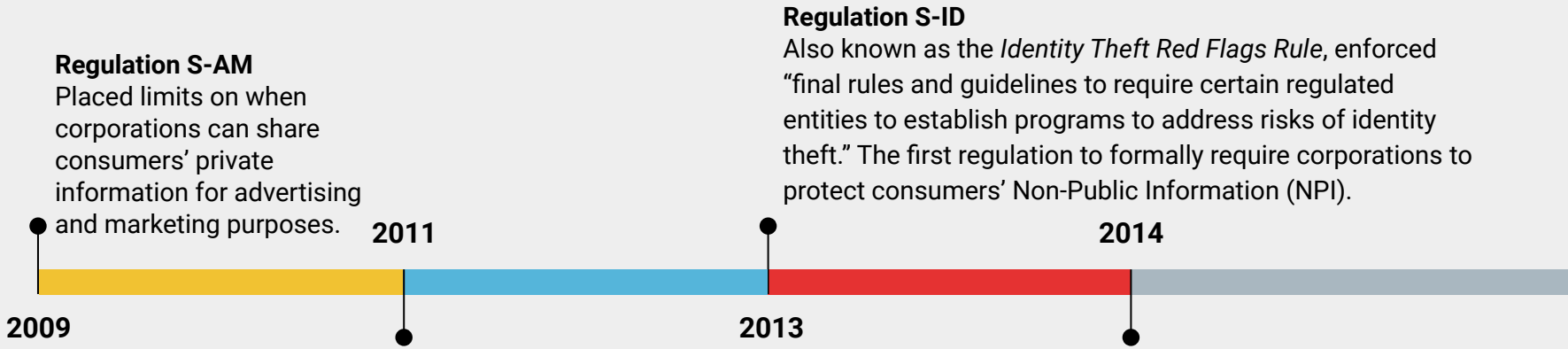
- Frameworks originate from the **Securities and Exchange Commission (SEC)**, the regulatory organization in charge of proposing and enforcing laws for financial instruments (for example, stocks, bonds, options), and protecting consumers from fraud.
- During the 1990s, the SEC worked with Congress to pass anti-fraud laws to discourage cybercrime.
- In 2000, the SEC moved past simple anti-fraud laws by adopting the regulatory statute Regulation S-P.

Rule 30 of Regulation S-P (Safeguard Rule)

Regulation S-P did not focus entirely on security, but Rule 30 mandated that organizations establish written policies and procedures designed to:

SEC Regulations

Additional regulatory statutes and administrative milestones followed.



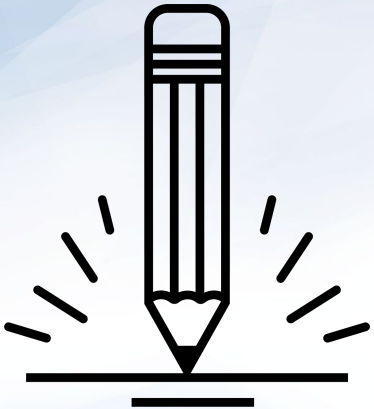
Common Governance Frameworks

All security professionals must be familiar with the following frameworks:

Health Insurance Portability and Accountability Act (HIPAA)

Title II: HIPAA Administrative Specification is a provision establishing privacy standards around electronic access to healthcare data. Organizations must uphold the following standards to remain HIPAA compliant:

- **National Provider Identifier Standard**: Requires all healthcare entities (people, healthcare providers, health plans, and employers) to have an ID, called the National Provider Identifier (NID).
- **Transactions and Code Set Standard**: Standardizes health insurance claims.
- **HIPAA Privacy Rule**: Standardizes protections for individually identifiable health information, such as prescription information and lab results. This defines what data to protect.
- **HIPAA Security Rule**: Standardizes measures of patient data security. This defines how well data should be protected.
- **HIPAA Enforcement Rule**: Provides guidelines for investigating non-compliant providers.



Activity: GDPR and PCI Compliance

In this activity, you'll explore the GDPR and PCI compliance framework and determine which data managed by GeldCorp is subject to their regulations.

Suggested Time:
15 minutes

Time’s Up! Let’s Review.

Countdown timer

15:00

(with alarm)

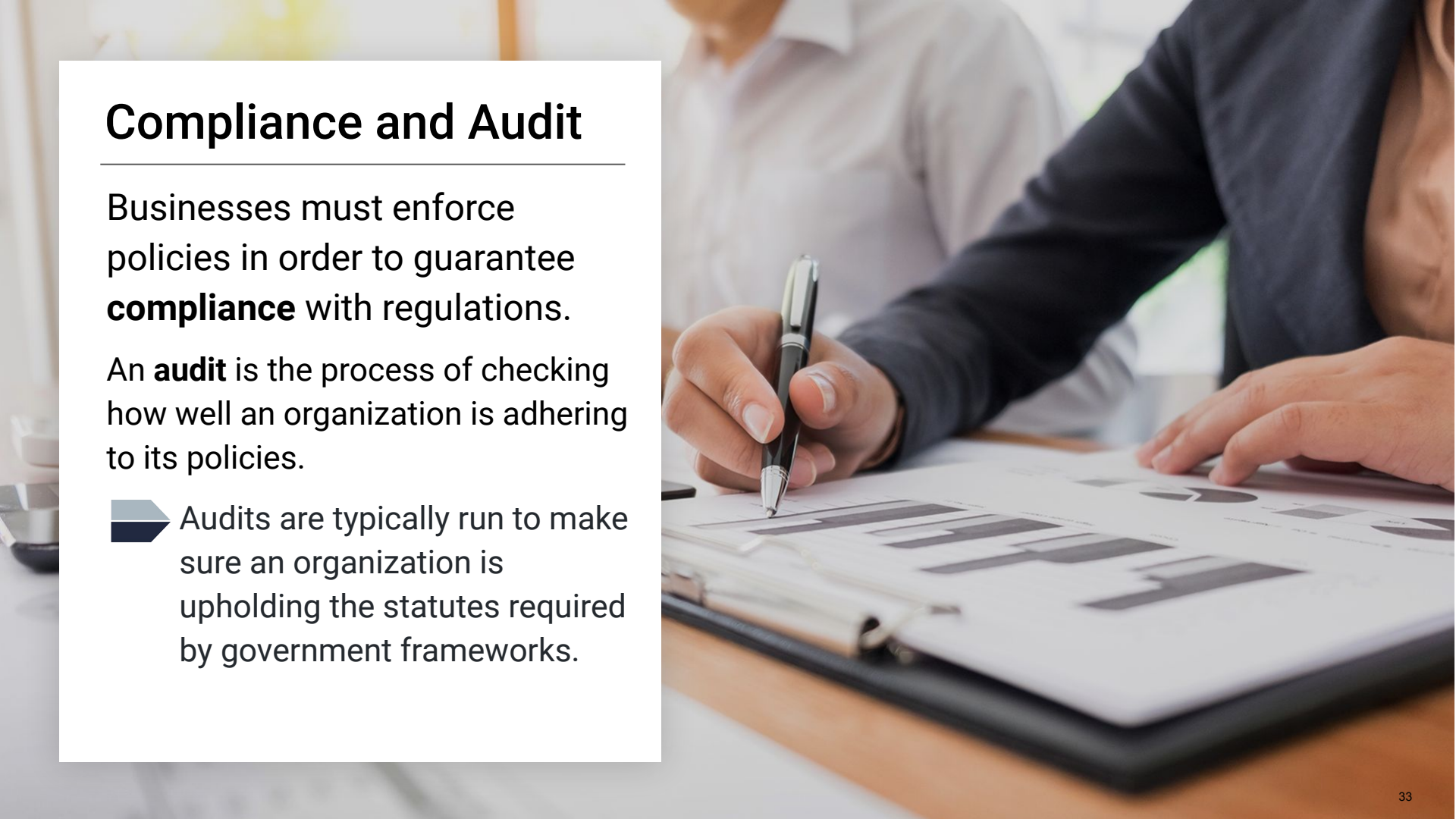
Audit and Compliance

Compliance and Audit

Businesses must enforce policies in order to guarantee **compliance** with regulations.

An **audit** is the process of checking how well an organization is adhering to its policies.

- Audits are typically run to make sure an organization is upholding the statutes required by government frameworks.



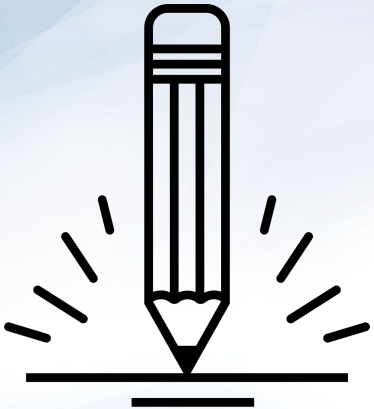
Performing an Audit

Auditors refer to each rule in the framework, and check that the business is following it.

If they find that the organization is violating a given mandate, they notify the Compliance/Legal and Executive teams in a final report.

If a business is found to be non-compliant in any way, the organization typically responds by:

- Acknowledging that they are aware of the non-compliance.
- Determining a timeline to fix the issue.
- Developing a plan to bring the organization back into compliance.



Activity: Audit Procedures

In this activity, you'll review how GeldCorp collects and stores user data to ensure their processes are GDPR compliant. You'll also identify any data that must be protected according to PCI standards.

Document any incidents of non-compliance so the organization can fix the issues.

Suggested Time:
10 minutes

Business Continuity Planning and Disaster Recovery (BCP/DR)

All the machinery of governance and compliance can’t guarantee that an organization will not experience a breach.

Businesses must still have contingency plans to prepare for the worst.

Contingency Planning for Business Continuity

A breach can have one of two results:

- **Mild / moderate breach**: The business has been impacted, but can still handle day-to-day operations at greater cost.
- **Serious / catastrophic breach**: The business has been impacted so severely that they cannot operate.

  Instead, they must use their resources to *contain* the incident, *recover* from the disaster, and eventually *return* to operations.

Contingency Planning for Business Continuity

Business continuity planning (BCP) and **disaster recovery** (DR) planning focus on contingency plans in the event of a disruption or disaster, and ensure that the business can resume daily operations.

What are some possible disruptions or disasters?

Cyber attacks

Human errors

Environmental disasters

Business Continuity Planning vs. Disaster Recovery

It is important to note the differences between BCP and DR.

Business Continuity Planning and Disaster Recovery

BCP and DR both begin with a contingency planning policy and business impact analysis.

- Contingency planning focuses mainly on the availability of information systems, taking into account the impact of the company *not* having access to these systems.
- Strategies for high-impact loss should consider high availability and redundancy options. For example, fully redundant load balanced systems at alternate sites, data mirroring, and offsite database replication.
- High-availability options are normally expensive to set up, operate, and maintain and should be considered only for those high-impact information systems categorized with a high-availability security objective.
- Lower-impact information systems may be able to use less expensive contingency options and tolerate longer downtimes for recovery or restoration of data.

NIST Impact levels

The following descriptions of impact levels originally appear in NISTs *Contingency Planning Guide for Federal Information Systems*.

Low	Moderate	High
The loss of confidentiality, integrity or availability could be expected to have a **limited** adverse effect on organizational operations, assets and individuals.	The loss of confidentiality, integrity or availability could be expected to have a **serious** adverse effect on organizational operations, assets and individuals.	The loss of confidentiality, integrity or availability could be expected to have a **severe or catastrophic** adverse effect on organizational operations, assets and individuals.

Contingency Planning

Contingency planning results in a **contingency policy statement**, which establishes the organization's framework and responsibilities for maintaining confidentiality, integrity, and availability of data. It includes:

- Responsibilities of an emergency response team
- Resource requirements
- Training requirements
- Schedule for plan maintenance

Business Impact Analysis and Risk Assessment

A pivotal step in BCP and DR planning is the Business Impact Analysis and Risk Assessment. Goals include:

- Identify key processes and functions of the business.
- Establish a detailed list of requirements for business recovery.
- Determine the resource requirements needed to resume key processes.
- Evaluate impact on daily operations.
- Develop priorities and classifications of business processes and functions.
- Develop recovery time requirements.
- Determine financial, operations, and legal impact of disruptions.

BIA Metrics

The results of the BIA impacts how the DR plan develops. In particular, it accounts for the following metrics:

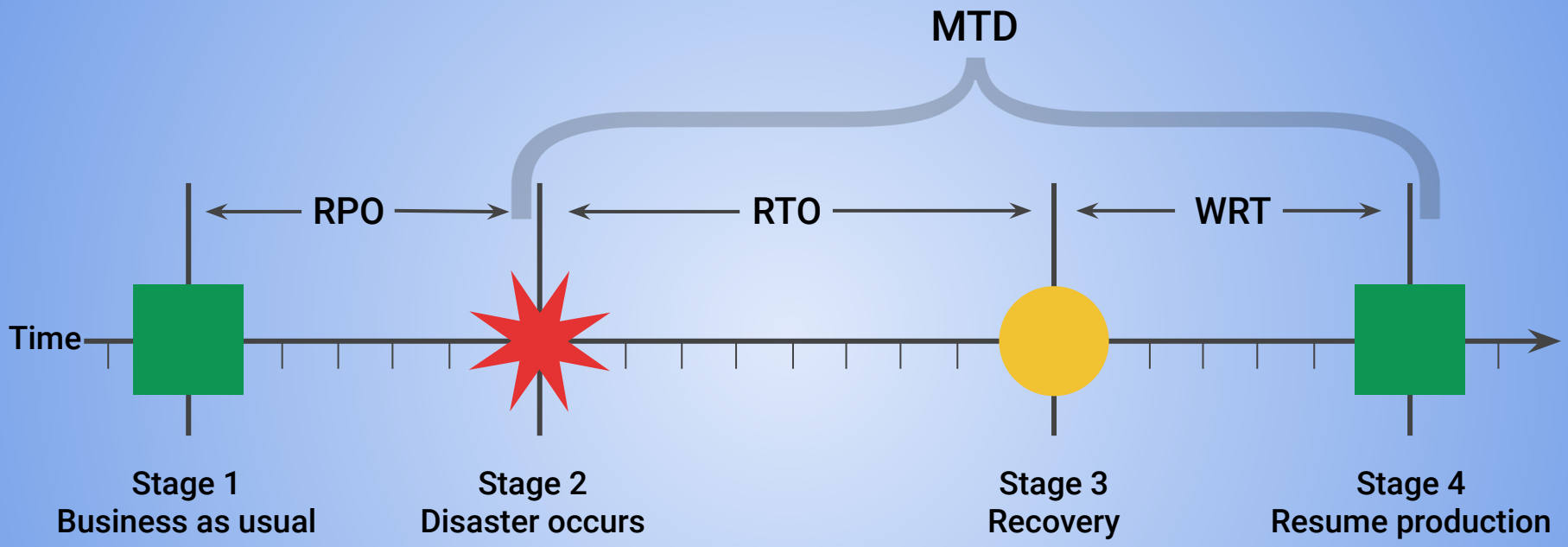
Recovery Point Objective (RPO) represents the amount of data that a business can afford to lose/recover (given the most recent backup copy of the data) after a disruption or system outage.

- For example, if a company performs weekly backups, they can tolerate/recover from a week's loss of data.

Maximum Tolerable Downtime (MTD) is the total amount of time a system can afford to be unavailable for users and the business.

- **Recovery Time Objective (RTO)** is the maximum tolerable amount of time needed to bring all critical systems back online after a disaster has occured.
- **Work Recovery Time (WRT)** is the time available to get the systems working again. WRT is the remainder of the MTD after the RTO. If MTD is four days and RTO is one day, WRT is three days.

BIA Metrics



Source

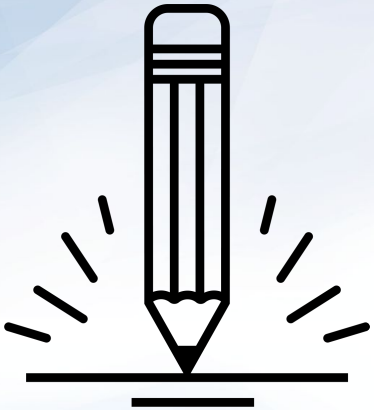
Alternate Site

One last consideration for disaster recovery is the use of **alternate sites** to house critical data technology functions. While disasters are rare, they may require that these operations be moved to one an alternate sites.

A **hot site** is ready to go at all times. It has equipment loaded with currently available data and can immediately continue operations. It is costly, but important for mission-critical data.

A **cold site** has very little existing infrastructure. It is not typically used until after a disaster occurs, so there must be a strategy for setting it up quickly when the time comes.

A **warm site** is in-between. For example, servers, hardware, software, and other equipment might be setup but not loaded with the latest data.



Activity: Disaster Recovery Planning

In this activity, you will continue to work in groups to create a high level disaster recovery plan for GeldCorp.

Suggested Time:
10 minutes

Time’s Up! Let’s Review.